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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/463,961	05/25/2000	HIROSHI IKEDA	0160-0193-0-	7006

7590 11/21/2001  
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EXAMINER

VANOY, TIMOTHY C

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 11/21/2001

#10

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09-463,961

Applicant(s)

IKEDA ET AL.

Examiner

VANDY

Group Art Unit

1754

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREE MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

☒ Responsive to communication(s) filed on dated Oct 1, 2001

☒ This action is FINAL.

- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

☒ Claim(s) 1-5 AND 7-10

is/are pending in the application.

Of the above claim(s)

is/are withdrawn from consideration.

☐ Claim(s)

is/are allowed.

☒ Claim(s) 1-5 AND 7-10

is/are rejected.

☐ Claim(s)

is/are objected to.

☐ Claim(s)

are subject to restriction or election requirement

## Application Papers

- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some\* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 9

☐ Interview Summary, PTO-413

☐ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other \_\_\_\_\_

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person "having ordinary skill in the art" has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

<sup>1-5 AND 7-10</sup>  
Claims ~~1-10~~ are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicants' description of the prior art set forth on pg. 1 lines 9 et seq. in their specification and pgs. 2 and 3 in the Gas Purification text by Kohl et al., the combination taken together in view of Japan Pat. Doc. No. 62-125,827 A.

The Applicants describe the prior art method for treating exhaust gas contaminated with  $\text{BCl}_3$ , etc. . . from semiconductor manufacturing operations with a wet type apparatus employing a chemical liquid (please see pg. 1 lines 9-15 and lines 21-24 in the specification). The Applicants further note that ordinary wet-type apparatuses suffer from blocking (i. e. clogging) due to the accumulation of solid reaction products (such as  $\text{B}_2\text{O}_3$ ) (please see pg. 2 lines 23-26 in the Applicants' specification). Pgs. 2 and 3 in the Gas Purification text by Kohl et al. further describe these conventional "packed towers" (please see pg. 2, 5<sup>th</sup> full paragraph in the Gas Purification text) and "spray contactor" (please see pg. 3, 1<sup>st</sup> full paragraph in the Gas Purification text) for removing contaminants out of exhaust gas via transfer of the substance from the gaseous to the liquid phase through the phase boundary. Also note that the description of the "spray contactor" sets forth that it is useful for the removal of HF and  $\text{SiF}_4$  out of exhaust gas (in a manner suggesting their utility for scrubbing the exhaust gas from semiconductor manufacturing operations).

The Applicants' description of the prior art set forth on pgs. 1 line 9 et seq. in their specification and description of the prior art "packed towers" and "spray contactors" set

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forth on pgs. 2 and 3 in the Gas Purification text is submitted to teach all and/or render obvious all of the Applicants' claimed invention, *but for* the Applicants' preliminary step of passing the exhaust through the aeration stirring tank.

The English abstract of Japan Pat. Doc. No. 62-125,827 A discusses and illustrates what appears to be the same aeration stirring tank for treating what appears to be the same  $\text{BCl}_3$  contaminated exhaust gas from a semiconductor manufacturing operation by injecting the  $\text{BCl}_3$  contaminated gas into either water or an alkali aqueous solution within the aeration stirring tank under conditions of stirring thereby hydrolyzing the  $\text{BCl}_3$  gas into  $\text{B}_2\text{O}_3$  solids (which is discharged out of the stirring tank) to produce a gas containing a diminished quantity of  $\text{BCl}_3$  and which is also (evidently) free from  $\text{B}_2\text{O}_3$  solids.

It would have been obvious to one of ordinary skill in the art at the time the invention was made *to modify* the prior art wet-type processes and apparatuses for treating the off-gas from semiconductor manufacturing operations described on pg. 1 lines 9 et seq. in the Applicants' specification *by including* the preliminary step of treating the exhaust gas with the aeration stirring tank taught in the English abstract of Japan Pat. Doc. No. 62-125,827 A as well as the Applicants' claims, *because* of the expected advantage of resolving the  $\text{B}_2\text{O}_3$  clogging problems that the Applicants submit on pg. 2 lines 23-26 in their specification plague such prior art wet-type processes *by using* the aeration stirring tank of Japan Pat. Doc. No. 62-125,827 A, which is taught to not only remove the  $\text{BCl}_3$  out of the gas but also to discharge the resulting  $\text{B}_2\text{O}_3$  solids out of the system.

Note that the English abstract of JP 62-125,827 specifically mentions the apparatus generates foam, in a manner rendering obvious the limitations of Applicants' claim 9.

Note that in Fig. 1 illustrated on pg. 4 in JP 62-125,827, the motor/stirring shaft/blade assembly provided to stir the gas injected into the liquid (evidently, thereby generating the foam). It is fully expected that the foam generated by the process of JP 62-125,827 will also be stirred by the rotary motion of the stirring shaft and blades, in a manner rendering obvious the limitations of Applicants' claim 10.

### ***Response to Arguments***

The Applicants' arguments submitted in their Amendment date stamped Oct. 1, 2001, which has been filed as paper no. 8, have been fully considered but they are not persuasive.

a) *The Applicants argue that the claims are not obvious from the description of the prior art set forth on pg. 1 ln. 9 et seq. in the Applicants' specification ("APA") and pgs. 2 and 3 in the Gas Purification text by Kohl et al., the combination taken together in view of JP 62-125,827 A because APA and Kohl et al. fail to teach or render obvious the Applicants' step of passing the exhaust gas through an aeration stirring tank, and the rotary atomizer of JP-827 does not include stirring blades and does not stir JP-827's liquid or foam.*

JP-827 remedies the argued deficiencies of both "APA" and the Kohl et al. references. Fig. 1 illustrated on pg. 4 within the text of JP-827 already shows the

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contaminated gas charged into the stirring tank (20) via gas discharge means (8). Fig. 1 illustrated on pg. 4 in the text of JP-827 clearly shows the provision of the motor/stirring shaft/blade assembly (9) for stirring the resulting gas/liquid mixture within the stirring tank (20). The English abstract of JP-827 already sets forth that the apparatus generates foam. Therefore, contrary to the Applicants' argument, JP-827 does render obvious the Applicants' argued steps of passing the exhaust gas through an aeration tank equipped with stirring blades so that the liquid and foam is stirred.

b) *The Applicants argue that because the aeration stirring tank of the present invention, which includes a stirring blade, provides a higher concentration gradient of harmful components at the gas-liquid interface, the present invention provides greater diffusion of harmful components from the exhaust gases and greater absorption efficiency that the unstirred system of JP-827. Because JP-827 is silent about the advantageous increase in absorption efficiency achieved by stirring, and is silent about stirring the liquid or foam with a stirring blade in an aeration tank, JP-827 fails to suggest the aeration stirring tank of the present invention.*

In Fig. 1 illustrated on pg. 4 in JP-827, the curved arrow about the stirring shaft clearly indicates that the blades attached to the bottom of this stirring shaft are stirring the liquid and/or foam via the rotary motion of the stirring shaft. Contrary to the Applicants' argument, the method and apparatus of JP-827 is a stirred system.


**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

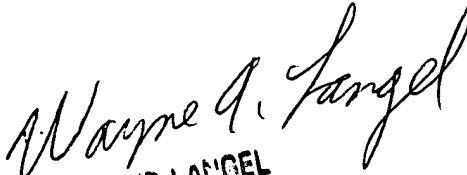
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 703-308-2540. The examiner can normally be reached on 8 hr. days.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffen can be reached on 703-308-1164. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3599 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Timothy Vanoy/tv	 Timothy Vanoy
June 15, 2001	Patent Examiner
Nov. 20, 2001	Art Unit 1754

  
WAYNE LANGEL  
PATENT EXAMINER  
GROUP 110